8/30/2018

Supplier	\$1,478.72 Metaux Castle	\$652.50 Metaux.	22
Total	6,12	665	\$2,131.22
g Past S Due	0	0	
it Agin Day			_
Price/Un	8/30/2018 \$ 40.86 / ft	Stock 8/30/2018 \$ 26.10 / ft	
Receive Date	8/30/2018	8/30/2018	
Status	Stock	Stock	
Received Accounting Container Status Receive Price/Unit Aging Past Quantity Job No No Date	\$107087	\$107088	
Accounting Job No			
Received Quantity	36	25	61
Due Date	8/24/2018	25 8/31/2018	
Order	4	25	69
Equipment ID			Total:
For Project Equipment Order No			
Description	7075-T6 Sheet 1.750"" X 2.250"": MATERIAL: 7075- T6/T62 ALUMINUM SHEET AS PER QQ-A-250/12 OR AMS- QQ-A-250/12 OR AMS 4045 OR ASTM BZ09 receive ft	7075-T73 Bar 1.250*** X.2.000*** Cut in Billet 30*** Long: MATERIAL: 7075-T73 OR 7075- T7351/T73510/T73511 BAR PER AMS-QQ-A-226/9 OR AMS-QQ-A-226/9 OR AMS-QQ-A-226/1 OR AMS-Q	
Purchased Item		M707517381.250X02.000 7075-T73 Bar 1.250*** X 2.000*** Cut In Billet 30*** Long: MATERIAL: 7075-T73 OR 7075- T7351/T73510/T7351 BAR PER AMS-QQ-A-225/9 OR AMS 4744 OR AMS-QQ-A-225/9 OR AMS-QQ-A-226/9 OR AMS-QQ-A	
Terms	Net 30		
Re.			
r Item No		20	
PO No Supplier Item No Terms	P0040612 MEC002-		
PO No	P0040612		

Plex 8/30/2018 2:11 PM dart. Tollis. Andrew



## PACKING SLIP/ CERTIFICATE OF CONFORMANCE

A. M. Castle & Co.

Page 1 of 2

Shipment No:3686769

Ship From:		Sold To:	Ship To:	Deliv	Deliver To:
A. M. CASTLE & CO. 2150 ARGENTIA ROAD MISSISSAUGA, ON L5N 2K7	& CO. TA ROAD A, ON L5N	DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN		DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7
CAN				CA	
Date Shipped	F.O.B.	Freight Terms	Carrier		BOL No
28-AUG-18	ORIGIN	Prepaid	MANITOULIN		3686769-2
Shipment Details	ails		Final Destination Branch - TOR	anch - TOR	
Order No	Line No	Item No	Description		
5231159	<del></del>	752207.MO	1.2500.PL.7075.T7351.ALUMINUM.USI.48.5000.144.500 CUT RECTANGLE TO 2 IN ( + .1250/0000 IN) X 30 IN ( .0000 IN) - ALUMINUM PLATE SAW SPECIFICATIONS: AMS-QQ-A-250/12	1.ALUMINUM.U 0.2 IN ( + .1250/ JM PLATE SAW	1.2500.PL.7075.T7351.ALUMINUM.USI.48.5000.144.5000 CUT RECTANGLE TO 2 IN ( + .1250/0000 IN) X 30 IN ( + .1250/- .0000 IN) - ALUMINUM PLATE SAW SPECIFICATIONS: AMS-QQ-A-250/12
Purchase Order No		Part Number	Ordered Qty		Invoice Qty
40612			10.00 PCS		10.00 PCS
Details	ALL PAP ALL MAT Email P/s END USE	ALL PAPERWORK MUST FOLLOW ORDER / CUSTOMER MUST RECEIVE AT TIME OF DELIVERY ALL MATERIAL MUST HAVE IDENTIFYING MARKINGS EX:HEAT #'S Email P/s and certs to: clavoie@dartaero.com END USER: DART AEROSPACE	NDER / CUSTOMER MU	ST RECEIVE AT EAT #'S	I TIME OF DELIVERY
Delivery No.	Mill/Source	Cource Heat Number Mech	Mech Id PCS	Width (IN)	Lenath (IN) Shipped Otv(LBS)
122080001	KAISER ALUMINUM	Z T			
122080001	CONSTELLIUM ROLLED PRODUCTS	9418223	2		54.3400



## CERTIFICATE OF CONFORMANCE PACKING SLIP/

A. M. Castle & Co.

Page 2 of 2

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. For creek the shipment. Material covered size, or material cut by the customer cannot be returned for creek the shipment. Material covered size, or material cut by the customer cannot be returned for creek. Reviewed by Authorized Castle Metals Representative:

DENGTH KAMEOUS

Date Printed: 28-AUG-2018 02:45:22 PM



## PACKING SLIP/ CERTIFICATE OF CONFORMANCE

A. M. Castle & Co.

Page 1 of 1

# Shipment No:3686769

Ship From:		iold To:	Ship To:	Deliver To:	
A. M. CASTLE & CO. 2150 ARGENTIA ROAD MISSISSAUGA, ON L5N 2K7 CAN		DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN	DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
Date Shipped	F.O.B.	Freight Terms	Carrier	BOL No	
28-AUG-18	ORIGIN	Prepaid	MANITOULIN	3686769-2	

Final Destination Branch - TOR

Shipment Details

Order No	Line No		Item No	Description	tion			
5220499	<del>-</del>	7	750488.MO	1.7500. CUT 2S .0000 IN AMS-Q	1.7500.PL.7075.T651. CUT 2SIDED TO 2.25 .0000 IN) - ALUMINU AMS-QQ-A-250/12	ALUMINUM.L IN (+.1250/- JM PLATE SA	1.7500.PL.7075.T651.ALUMINUM.USI.48.5000.144.5000 CUT 2SIDED TO 2.25 IN ( + .1250/0000 IN) X 48.25 IN ( + .0000 IN) - ALUMINUM PLATE SAW SPECIFICATIONS: AMS-QQ-A-250/12	1.7500.PL.7075.T651.ALUMINUM.USI.48.5000.144.5000 CUT 2SIDED TO 2.25 IN ( + .1250/0000 IN) X 48.25 IN ( + .1250/- .0000 IN) - ALUMINUM PLATE SAW SPECIFICATIONS: AMS-QQ-A-250/12
Purchase Order No		Part Number	mber	Ordered Qtv	d Qtv		Invoice Otv	Otv
40612				9.00 PCS	S		9.00 PCS	
Details	ALL PAP	FERIAL N	ALL PAPERWORK MUST FOLLOW ORDER / CUSTOMER MUST RECEIVE AT TIME OF DELIVERY ALL MATERIAL MUST HAVE IDENTIFYING MARKINGS FX-HFAT #'S	ORDER / CU	STOMER MUX	ST RECEIVE	AT TIME OF D	ELIVERY
	Email P/s and certs to: END USER: DART AE	s and cel	Email P/s and certs to: clavoie@dartaero.com END USER: DART AEROSPACE	aero.com	) ) )			
	END US	E: COMI	END USE: COMMERCIAL AIRCRAFT PARTS	<b>FARTS</b>				
Delivery No.	Mill/Source	Неа	Heat Number	Mech Id	PCS	Width (IN)	Lenath (IN)	Width (IN) Length (IN) Shipped Otv(LBS)
122058944	CONSTELLIUM ROLLED PRODUCTS	60	383589		6			177.0385

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material are waived unless made in writing to A.M. Castle & Co. within 60 days of the applicable. Menacriticity in conformation any specification of the description. Reviewed by Authorized Castle Metals Representative: ,005 TO Name: Date: AUG 2 8 2018



Dart Aerospace Ltd. 1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada

### PURCHASE ORDER PO040612

Tel (613) 632-5200

Supplier: MEC002-VU

Metaux Castle P.O. Box 4090 Stn A

Toronto ON

M5W OE9 Canada

PO No:

PO040612

PO Date: Due Date: 7/26/18 8/24/18

Purchase Order

Revision:

Revision Date: Ship-To Contact:

Lavoie, ChantalPhone:

clavoie@dartaero.com

Ship To:

1270 Aberdeen Street

Hawkesbury ON

K6A 1K7 Canada Phone: 613-632-5200 Via:

Ground

Pymt Terms:

Net 30

Freight Terms:

Special Comments:

Line Item	Job	Part	Supplier Part No	Description	Status	Account	Due Date		Received Quantity	Balance	Unit Price (USD)	Extended Price
M	A de la companya de l	M7075T6S1.750X2.250	The state of the s	7075-T6 Sheet 1.750" X 2.250" : MATERIAL: 7075-T6/T62 ALUMINUM SHEET AS PER QQ-A-250/12 OR AMS-QQ-A-250/12 OR AMS 4045 OR ASTM B209 receive ft	Firmed	•	8/24/18	43,75 ft	0 ft 36.1944		\$40.86M	
ine Item No	te 20 p	c - 48.25" long	-	, gargering programmed as much the order is under a visit matter a visit material machine from the attention of	,						C + 100 mm market m	
A.		M7075T6S1.250X2.750		M7075T6S1.250" X2.750" Cut From Plate : MATERIAL: 7075-T6/T62 ALUMINUM SHEET AS PER QQ-A-250/12 OR AMS-QQ-A-250/12 OR AMS 4045 OR ASTM B209 receive ft	Firmed		8/24/18	12 ft	12.04		\$31.20M	1
OK /		M7075T6S0.375X3.000		7075 T6 Sheet 0.375" X 3,000" : MATERIAL: 7075-T6/T62 ALUMINUM SHEET AS PER QQ-A-250/12 OR AMS-QQ-A-250/12 OR AMS 4045 OR ASTM B209	Firmed		8/24/18	60 ft	60-21-		\$11.86/R	
AT		M7075T6S0.750X4.000	And the second of the second o	7075 T6 Sheet 0.750" X 4.000" : MATERIAL: 7075-T6/T62 ALUMINUM SHEET AS PER QQ-A-250/12 OR AMS-QQ-A-250/12 OR AMS 4045 OR ASTM B209	Firmed	The state of the s	8/24/18	40 ft	0 ft 48.17.1		\$28.58/ft A118/68	\$1,143.2

Line Item	Job	Part	Supplier Part No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extende Price
At		M7075T6S1.000X1.250		7075 T6 Sheet 1.000X1.250 : MATERIAL: 7075-T6 OR T651/T6510/T6511/T62 ALUMINUM BAR AS PER AMS-QQ-A-225/9 OR AMS 4122/4123/4186/4187 OR PER AMS-QQ-A-200/11 receive ft	Firmed	-	8/24/18	12 ft	2.04	12 ft	\$17.15/M	1
13 / Al		M2024T3S.090	yang paggalahanin binan	2024-T3 .090 Sheet : MATERIAL: 2024-T3 ALUMINUM SHEET AS PER QQ-A-250/4 OR AMS-QQ-A-250/4 OR AMS 4037 OR ASTM B209 receive sf	Firmed	-	8/24/18	144 sf	14454	144 sf	\$8.16/sf AT (8/08)	\$1,175.0
19		M6061T6B2.000X08.000		6061-T6 Bar 2.00' X 8.00" ( Cut In 4Ft Section) : MATERIAL: 6061- T6/7651/T6510/T6511/T62 ALUMINUM BAR/PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS-QQ-A-200/8 OR AMS-4160 OR ASTM B211 OR ASTM B221 receive ft	Firmed		8/24/18	8 ft	Oft	8 ft	\$56.83/ft	\$454.6
ne Item Note	cut i	n section of 4 ft	·									The same of the same of
250 V AC		M7075T73B1.250X02.000		7075-T73 Bar 1.250" X 2.000" Cut in Billet 30" Long : MATERIAL: 7075-T73 OR 7075- T7351/T73510/T73511 BAR PER AMS-QQ-A- 200/11 OR AMS-QQ-A- 225/9 OR AMS 4124 OR AMS-QQ-A-250/12 OR AMS 4078 receive ft	Firmed	-	8/31/18	25 ft	0 ft 25ft		\$26,10/h Af 18/0	\$652.5 8/30

0	rd	er	N	0	te

Procurement Quality Clauses A005 right of entry A012 chemical and physical test report

A016 personnel qualification A017 raw material identification (as applicable)

A026 certification of material conformance

A041 quality management system

A042 dart notification by supplier

A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing (Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 8/17/18 8:19 AM dart.lavoie.chantal

SHIP TO:

A M CASTLE METALS 4175 ROYAL DRIVE, SUITE 600 KENNESAW, GA 30144

KAISER ALUMINUM

Trentwood Works

PO Box 15108, Spokane Valley WA 99215-5108 15000 E Euclid, Spokane Valley WA 99216

Phone: (800) 367-2586

SOLD TO:

AM CASTLE & CO- SOLD TO 1420 KENSINGTON RD SUITE 220 OAK BROOK, IL 60523

### CERTIFIED TEST REPORT

Serial Number 4506897

CUSTOMER PO NUMB 457976-1	ER:	WOR	K PACKAGE:	752207	ART NUMBER:			RUN/LOAD: GOV'T 0	CONTRACT NUMBER	
KAISER ORDER NO: 1254250-1			SHIP DATE: 20-APR-201	8 7075	GLAD: BARE	TEMPER T7351				
WEIGHT SHIPPED: 8100 LB	9 PCS			(B/L#: 227	GAUGE: 1.2500	N 31.7500 MI		DIAMETER/WIDTH: 48,500 IN (1231.9 MM)	LENGTH: 144.500 IN	(3670.3 MM)

MHU 2204153: LOT 709772B8: 3 pieces; MHU 2206103: LOT 264205B6: 2 pieces; MHU 2206105: LOT 26420586: 4 pieces:

### **Certified Specifications**

AMS 4078/RevJ ASTM B 209/Rev14 BSS 7055/RevB DPS 4.713/RevAK GSS16100/RevG/Amd1 PS 21211/RevP

AMS-QQ-A-250/12/RevA ASTM B 594/Rev13 CMMP 025/RevV EAC MS1011/RevE MMS 159/RevT

AMS-STD-2154/RevC BAC 5439/RevJ CSTI 006/RevE GAMPS 9101/RevB/AmdSCN1 PPS 20.04/Rev7

Test Code: 4297

Lot: 264205B6

Cast 624

Drop 26

**Test Results** 

Ingot 3

Melted in USA

(ASTM E8/B557)

(EN 2002-1)

Tensile:

Temper

Dir / # Tests

Ultimate KSI (MPA)

Yield KSI (MPA)

Elongation %

T7351

LT / 3 (Min:Max)

71.8:72.9 (495:503) 61.2:62.8 (422:433) 13.1:13.3

(ASTM E1004)

39.9 Min

(EN 2004-1)

Conductivity %IACS:

23.1 Min

40.5 Max

23.5 Max

(ASTM E1251)

Chemistry: Actual(wt%)

SI FE 0.08 0.16

CU 1.4

(MS/M):

MN 0.04 MG 2.5

CR 0.20

ZN TI 5.6

0.03

0.01

ZR 0.02

OTHER TOT

0.03



### CERTIFIED TEST REPORT

Serial Number 4506897

Trentwood Works PO Box 15108, Spokane Valley WA 99215-5108 15000 E Euclid, Spokane Valley WA 99216 Phone: (800) 367-2586

709772B8

Cast 624

Drop 11

Ingot 1

Parent Lot: 259694B8

Melted in USA

(ASTM E8/B557)

(EN 2002-1)

Tensile:

Temper T7351

Dir / # Tests

Ultimate KSI (MPA)

Yield KSI (MPA)

Elongation %

LT / 2 (Min:Max)

72.1:72.5

61.6:62.2

13.1:13.4

(497:500)

(425:429)

(ASTM E1004)

(EN 2004-1)

(MS/M):

Conductivity %IACS:

40.6 Min

40.9 Max

23.5 Min

23.7 Max

(ASTM E1251)

Chemistry: Actual(wt%)

SI FE 0.08 0.15

CU MN 1.5 0.03 MG 0.20 2.5

ZN 5.7

TI 0.03 0.01

ZR 0.02 TOT

OTHER 0.03

**ALLOY LIMITS** 

CR

7075

SI FF CU MN

MG CR ZN

V

0.00

0.05

TI

ZR OTHER

MAX

MIN(wt%) 0.00 MAX(wt%) 0.40 0.00 0.50

1.2 0.00 2.0 0.30

2 1 0.18 2.9 0.28

0.00 5.1 0.20 0.00 0.05 EACH TOT

0.05 0.15

Aluminum Remainder ORDER COMMENTS

AMC CA-15413A R B

### **TEST NOTES**

Metal represented by this test report was 100% Type I (immersion) ultrasonically tested from one side with 3mm dead zones top and bottom and meets the Class A and Class B requirements of all specifications referenced on this test report. No surface marking of sonic indications is performed.

### CERTIFICATION

Kaiser Aluminum, Trentwood Works, is ISO 9001, AS9100, and ISO 14001 certified, and hereby certifies that all material shipped under this order:

\* has been inspected, tested, and found to be in conformance with the requirements of the specifications indicated herein.

All tast equipment and measuring devices are calibrately and certified in accordance applicable aspecifications. For material thicknesses outside specification limits, mechanical properties are as shown herein and chemical composition meets specification requirements. Reported alongation values have been measured as alongation at resource.

\*\*was method in the United States of America or a qualifying country ner DFARS 252.225 for consistic content.

\*\*has been thermally processed in compliance with AMS 2772, where applicable.

\*\*Is mercury free, within the limits of pertection of ASTM E1215 (< hppm).

\*\*Is in compliance with RoHS 2, European Union Directive 2011/65/EU.

\*\*Is in compliance with European Chemical Agency, ECHA, REACH regulations, (EC) No 1907/2006, and Kaiser regularly monitors these regulations for updates.

\*\*Is free of Conflict Minerals, as defined in Section 15.2 of the Dodd-Frank Act.

\*\*In free of weld repair.

\*\*meets the reporting requirements of EN10204, Type 3.1.

\* is free of weld repair.
\* meets the reporting requirements of EN10204, Type 3.1.
\* meets the reporting requirements of EN10204, Type 3.1.
\*Any warranty is limited to that shown on Karser Aluminum's standard general terms and conditions of sale. Test reports are on fille, subject to examination. Test reports shall not be reproduced except in fully, without the written approval of the Karser Aluminum laboratory. The recording of false, floritious or fraudulant statements or entries on the certificate may be punished as a falony under faderal law.

Page 2 of 2





Dave Dunbarger - Laboratory Manager

н о	A M CA	STI F 110656605 4776	INCLUSION Complements addresses by a fire
H 4175 ROYAL DRIVE L 1420 KENSINGTON ROAD, SUITE 220 OAK BROOK IL 60523	0		0
H 4175 ROYAL DRIVE L 1420 KENSINGTON ROAD, SUITE 220 DAK BROOK IL	T		
The state of the s	1	KENNESAW GA	L 1420 KENSINGTON ROAD, SUITE 220 D OAK BROOK IL
S A M CASTIF & COMPANY	5	A M CASTLE & COMPANY	s A M CASTLE

A M CAS	TLE	1106566	395 4776		INCL	USION Ser	lal:20180510-0110856695 Pg 1of5
CUSTON 453759	WER PURC	CHASE OR	DER NO. & ITE	補	Conste 232834	ellium ORDER NO.	"Constellium Rolled Products, hereby certifies that metal shipped under this order has been
ALLOY 7075	CLAD	TEMPER T7351	GAUGE 1.25000 in 31.75 mm	48.500 1,232	000 in	LENGTH 144.50000 in 3,670 mm	inspected and found in conformance with the requirements of the applicable specifications as indicated herein. Any warranty is limited to that shown on Constellium Rolled Products' standard
MILL FIN	ATE, SAV	VED			W 10 10 10 10 10 10 10 10 10 10 10 10 10		General Terms and Conditions of Sales. Test reports are on file, subject to examination."  Constellium Rolled Products Ravenswood, LLC 859 Century Road P.O. BOX 68
AMS 407	.81						RAVENSWOOD, WV 26164 USA
752207	JMBER		B/L NUM 99378	IBER		E SHIPPED V2018	1.11
WT. SHIP 8010.000			O. OF PIECES	GOVT.	CONTR	ACT NO.	Ward Alimbarga

ALL LOTS ON THIS CERTIFICATION ALSO CONFORM TO THE FOLLOWING REQUIREMENTS:

ASTM B594 REV 13 2013 100% SONIC W/ 0.12" DEADZONE Class A

AMS QQ-A-250/12A AMS-STD-2154A 2012 TYPE1 CLASS A 100% SONIC MINUS DEADZONE ASTM B209-14

AS IM B203-74
BSS-7055B 2013 CLASS A 100% SONIC TESTED MINUS DEADZONE
CMMP025 REV U
CSTI006 REV E 2011 CLASS A 100% SONIC MINUS DEADZONE
DPS 4.713 REV AK 2012 CLASS A 100% SONIC MINUS DEADZONE
GAMPS 9101 REV B 2006 CLASS A 100% SONIC MINUS DEADZONE MMS 159T PS 21211P 2010 CLASS A 100% SONIC MINUS DEADZONE

### Load Details

Potenta.						
Package	Net Lbs	Kg	Lat	Piece	Serial	Parent Lot
1001754056	890.000	403.697	9418219	01		
1001754056	890.000	403.697	9418219	02		
1001754056	890,000	403.697	9418219	03		a M Pa
1001776160	890.000	403.697	9418221	01		COSPAC
1001776160	890.000	403.697	9418221	02		
1001776160	890.000	403.697	9418221	03		10
1001776162	890.000	403.697	9418223	01		
1001776162	890.000	403.697	9418223	02		
1001776162	890.000	403.697	9418223	03		

Lot: 9418219 (See test results below)





P-860-155D REVISED: 01 2018



### CERTIFIED TEST REPORT Constellium Rolled Products Ravenswood, LLC

H 417	110 URCHASE D TEM	GA GAUE GAUE GAUE GAUE GAUE GAUE GAUE GA	4778 10. & ITEI	WIDTH 48.600	Cons 2328	134  LE  14		NO.	1420 OAK 6052 US "Conste insperequire indicate shown Gene	BRCO 3 0510-01  illium Retat shippeted and sements con Con real Term retail Te	INGTON ROAD, SUITE 220
CUSTOMER SI AMS 4076J		TION	B/L NUM	BER		TE SHI				RAYEN	P.O. BOX 68 ISWOOD, WV 26164 USA
752207 WT. SHIPPED 8010.000 LB		NO. OF 000009	99378 PIECES	GOVT.		/10/2018					Dunbarger - Laboratory Manager
Tensile - Room Direction LT	Temperal Tests 02		e (KSI) Max 72.4	· · · · · · · · · · · · · · · · · · ·	/ield /lin 60.6		iax 2.1	Elor Min 12,5		(%) Max 12.5	Report
Tensile - Room		Ultimat	e (N/MM2	-1		(N/MM2		Elor	ngation	(%)	Report
Direction	Tests 02	Min 494	Max 499		āin 118		8X 28	12.5		12.5	
Conductivity		% IAC	S MIN 40.	9 MAX 4	1.1 9	% MS/M	MIN 23	1.7 MA	X 23.8		
Chemistry (Ac	SI F	FE CU 0.10 1.50	MN 0.01	MG 0	:R ).20	ZN 5.66	T1 0.03	ZR 0.00	)		
OTHERS-EAC	H: .05 MA)	K. OTHER:	3 TOTAL:	.15 MAX	AL E	REMAIN	DER				
All material co				***************************************	actur	ed in th	e USA				





P-860-155D REVISED: 01 2018



### CERTIFIED TEST REPORT Constellium Rolled Products Ravenswood, LLC

! _ 1 _ A	M CAS	ric o	004	ama alsz	wi 4/	y. , ******	20	ſ				r,000-1		
H 41	75 ROY INNESAV	75 ROYAL DRIVE INESAW GA						NAME OF THE PARTY	SDLD FO	1420	8R00	INGTON	ROAD	), SUITE 22
A M CASTLE	1	10656	395	4776		INC	CLUSI	ON	Sari	iel:2016	0510-01	10656695	1	Pg 3of5
CUSTOMER   453759	PURCHAS	SE OR	DER N	0. & ITE		Con 2328		m ORDE	R NO.	ITR	eta! ship;	sed under !	ts, here	eby certifies the
ALLOY CL	177	MRER 351	1.250	GE 200 in 5 mm		TH 3000 In 2 mm		ENGTH 144.50000 3,670 mm		nequir indicat tworks	ements d led herei	of the appli n. Any was stellium Ro	cable s ranty is ifed Pro	lance with the pecifications as silmited to the ducts' standard
SPEC PLATE MILL FINISH										repo	rts are d tellium R	n file, sub	ect to	of Sales. Test examination." renswood, LLC
CUSTOMER S AMS 4078	SPECIFIC	ATION	ĺ	ar a tagh airi ghidhilipe <sub>ar</sub> ding <sub>aran</sub> ang a	8 <del>- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - </del>		\$4************************************					P.O. BO SWOOD, V	X 68	
PART NUMBI 752207	ER			B/L NUM 99378	BER		ATE SI /10/20	HIPPED 18		,	1	1 .//	7,	
WT. SHIPPED 8010.000 LB	)		O. OF 1	PIECES	GOVT	, CON	TRAC	FNO.			Dave	Dunbaroar	- Lahor	atory Manager
Tensile - Roo	m Tempe			e (KSI)		Yleld	(KSI)		Elo	ngalion		Repo		,
Direction	Tests		Ain	Max		Min		Max	Wir		Max			
LT	02	7	2.6	73.6		61.6		62.9	13.	0	13.0			
Tensile - Roo	m Tempe			a (N/M:M:	2)	Yleld	(N/MN	12)	Elo	ngation	(%)	Repo	rt	
Direction	Tests	N	Min	Max		Min		Max	Mir	1	Max			***************************************
LT	02	5	01	507		425		434	13.	0	13.0			
Conductivity			% IAC	S MIN 40	5 MAX	41.8 9	% MS/	M MIN 2	3.5 M/	AX 24.2			.,	44-44-44-44-44-44-44-44-44-44-44-44-44-
Chemistry (A														
Core	0.05	FE 0.10	CU 1,43	MN 0.01	MG 2.56	CR 0.20	ZN 5,87	Ti 0.04	ZR 0.0					
OTHERS-EAG	CH: .05 M	AX. 01	HERS	TOTAL:	.15 MA	X. AL F	REMA	NDER						
All material co	ontained i	in this	lot wa	s cast er	ıd manı	ıfactur	ed in t	he USA						
Lot: 9418	223 (Se	ee tes	t resi	ults belo	nw)									





EXPERIMENTAL STATES AND	per at action of experience of the department	al colored constitution	HOUSE TO	entertantation de Monte	a success descript .	968891 ×	*******			±.35	AMERICA	لك. بالدراد الدراد الا	Mary and the control of the control	
Isl AN	CAST	F.R	COM	PANY				Γ	B	A M	CASTL	.E		
H	5 ROYA								0	1420	KENSI	NGTON F	OAD S	BITE 220
	D RUTE INESAW		AAE						D	OAK	BROOK	(IL	with the	
301 US	44								-	6052 US	3			
0									0					
4 M CASTLE	11	06566	95	4776		INC	LUSION	1	Seri	al:20180	510-011	0656695	Pg 4	of5
CUSTOMER PL	JRCHAS	E ORD	ER N	O. & ITEM	Į.	Cons	teilium	ORDE	R NO.	"Conela		CERTIFICA		cortifies tha
453759						2010	-			me	tal shipp	ed under th	ls order h	as been
ALLOY CLA		<b>IPER</b>			WIDT			NGTH		require	ments o	found in co	able speci	fications as
7075	T73	51	1.250 31.75		48.50 1,232	000 in		4.50000 70 mm	in	indicat	ed hereir	i. Any wara stellium Rolk	enty is lim	ited to that ts' standard
ITEM ORDERE						d	ve-12122500000000000000	ne dalare e energia e e siamalar	arras Judgeston	Gene	rai Termi ds are o	s and Condi n file, subje	itlans of S of to exam	ales. Test nination."
SPEC PLATE, S MILL FINISH	SAVVED									Const	ellium Po	olled Produc 859 Century	ts Revens	wood, LLC
CUSTOMER SP	PECIFICA	TION						V			RAVEN	P.O. BOX		USA
									1					
PART NUMBER	₹			B/L NUM 99378	BER		TE SHI					1 1		
						7 7 7 7			1		1//	216		
WT. SHIPPED					GOVT	CONT	RACT	VO.			Allen	and sectioning	4	
8010.000 LB		001	1002								Dave	Dunbarger -	Laborator	y Manager
Tensile - Room	Temper	ature	(US)											
f management of the section				e (KSI)		Yield	(KSI)		Elo	ngation	(%)	Repor	t	
Direction	Tests	N	lin	Max		Min	N	xs	Mir	1	Max			
LT	02	7.	2.5	72.7		61.7	6	2.2	12.	5	12.5			
Tensile - Room	Temper	ature	(SI)											
		U	ltimet	e (N/MM2	2)	Yield	(N/MM2	)	Elo	ingation	(%)	Repor	t 	
Direction	Tests	N	lin	Max		Min	N	lax	Mir	)	Max			
LT	02	5	00	501		425	4	29	12.	5	12.5			**************************************
Conductivity		-	% IAC	S MIN 40	4 MAX	40.7	/ MS/M	MIN 2	3.4 M	AX 23.6	of a charle based by Marine trans	والمستخدم والمستحد والمستحد	Constant de mariant de viste	
Chemistry (Ac	tual)	**************************************												
÷	Si	FE	CU	MN	MG	CR	ZN	TI	ZR					
Core	0.05	0.10	1.43	0.01	2.56	0.20	5.67	0.04	0.0	ıu		3.5	Wa.	
OTHERS-EAC	H: .05 M	AX. OT	HER	S TOTAL:	.15 MA	X. AL I	REMAIN	DER			pp.			4
												0	-	4
All material co	ntained 1	n this	Int we	se roet a	nd man	ifactur	ed in th	AZU e				05	568-1	-1
QUALITY TE		II UIJO	THE WA	as cable	IN INTERIOR	wide Armi	AND THE PARTY OF T		ingi i pin mim neti	***************************************	magaadii qiddi ee ac dh	PAT	11/6	de
AMC CA-15413	AR8											A Pro-		5/16/

P-860-155D REVISED: 01 2018

Revised Certification: "Also conforms with CMMP 025 Rev V" - customer request.

"Revision certifies the material properties and condition as it originally left the mill, not as of date of revision".





DESIGN	DRAWN BY	DART AEROSPA HAWKESBURY, ONTARIO	
CHECKED	APPROVED	DRAWING NO. M7075T73B	REV. A
DATE OL.	06-08	7075 - T73 BAR	SCAL
A	01.06.08	NEW ISSUE	

PURCHASE MATERIAL:

PER AMS-QQ-A-200/11 OR AMS-QQ-A-225/9 (AMS 4124)
OR AMS-QQ-A-250/12 (AMS 4078)

PART NUMBER:

M7075T73BT.TTT X NW. WWW WHERE T. TTT = THICKNESS (IN INCHE) INV. WINW = WIDTH (IN INCHES)

EG. 2.5" X 3.25" BAR = M7075T73 B2.500 X 03.250



### MATERIAL RECEIPT INSPECTION FORM

MATERIAL:	757731 130	81.250×0	Q av	PO / BATCH	NO.: <u>Poo</u>	40612/5/07
MATERIAL CERT REC'D: 165  QUANTITY RECEIVED: 25 14  QUANTITY INSPECTED: 25 14  QUANTITY REJECTED: 0			THIC	CKNESS ORDE CKNESS RECEI ET SIZE ORDE	VED: /.a	250"
QUANTITY REJECTED.			SHE	ET SIZE RECEI	VED:	
DESCRIPTION	NCR (Check Y/N)			COMMEN	тѕ	
SURFACE DAMAGE	YW	1				
CORRECT FINISH	YN					
CORROSION	Y (N)					
CORRECT GRAIN DIRECTION	YN					
CORRECT MATERIAL PER M-DRAWING	Y N	AMS	4078			
CORRECT THICKNESS	N					
PHOTO REQUIRED	YN					
CORRECT REF # TO LINK CERT	YN	11:	7097728	3 , 94/823	B	
ORRECT MATERIAL IDENTFICATION		-				
CORRECT M# ON THE MATERIAL	(Y) N					
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	YIN					
DOES THIS REQUIRE AN	1					
EXTRUSION REPORT	YM					
CUT SAMPLE PIEC	F OF MA	TERIAL A	ND PREFOR	M A HARDNE	SS CHECK	
331 37 1111 22 1 1231			ULTS BELOV		OO OHLON.	
		HRC	HRB	DURA	DUR D	WEBSTER
YPE OF MATERIAL						
IZE OF TEST SAMPLE						
ARDNESS / DUROMETER READI	NG					
	testers	located in	the Quality Offic	<u>ce</u>		
C 18 INSPECTION				ENGINEER	RING SIGNO	FF (if required)
						(madama)
INSPECTED BY:			SIG	NED OFF BY:		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in





A M CASTLE & CO. S Н 14001 ORANGE AVE. 1 PARAMOUNT CA p 90723 US T

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s 0 L 0 0

A M CASTLE

1420 KENSINGTON ROAD, SUITE 220 OAK BROOK IL 60523 US

Steve Good - Laboratory Manager

A M CAS	TLE	1105169	70 4075		INCLL	ISION Ser	rial:20170322-0110516970 Pg 1of3
CUSTON 413045	MER PURC	CHASE ORI	DER NO. & ITE	М	Conste 198377	llium ORDER NO.	"Constellium Rolled Products, hereby certifies a
ALLOY 7075	CLAD (	TEMPER	GAUGE 1.75000 in 44.45 mm	WIDTH 48.500 1,232 r	00 in	LENGTH 144.50000 in 3,670 mm	inspected and found in conformance with the requirements of the applicable specifications a indicated herein. Any warranty is limited to the shown on Constellium Rolled Products' standard.
SPEC PL MILL FIN	ATE, SAV	VED					General Terms and Conditions of Sales. Tes reports are on file, subject to examination." Constellium Rolled Products Revenswood, LLC 859 Century Road
	AER SPEC -A-250/12	IFICATION A					P.O. BOX 68 RAVENSWOOD, WV 26164 USA
PART NU 750488	JMBER		B/L NUM 77792	BER	DATE 03/22	SHIPPED /2017	Steve Gul
WT. SHIP 9940.000			O OF PIECES	GOVT.	CONTRA	ACT NO.	

ALL LOTS ON THIS CERTIFICATION ALSO CONFORM TO THE FOLLOWING REQUIREMENTS:

ASTM B594 REV 13 2013 100% SONIC W/ 0.125"DEADZONE Class A AMS 4045K

AMS-STD-2154A 2012 TYPE1 CLASS A 100% SONIC MINUS DEADZONE

**ASTM B209-14** 

BSS-7055B 2013 CLASS A 100% SONIC TESTED MINUS DEADZONE CSTI006 REV E 2011 CLASS A 100% SONIC MINUS DEADZONE

DPS 4.713 REV AK 2012 CLASS A 100% SONIC MINUS DEADZONE GAMPS 9101 REV B 2006 CLASS A 100% SONIC MINUS DEADZONE PS 21211P 2010 CLASS A 100% SONIC MINUS DEADZONE

### **Load Details**

Package	Net Lbs	Kg	Lot	Piece	Serial	Parent Lot
1001476359	1,245.000	564.722	9383589	01		
1001476359	1,245.000	564.722	9383589	02		
1001476360	1,245.000	564.722	9383589	03		
1001476360	1,245.000	564.722	9383589	04		
1001476361	1,240.000	562.454	9383590	01		
1001476361	1,240.000	562.454	9383590	02		
1001476362	1,240.000	562,454	9383590	03		
1001476362	1,240.000	562.454	9383590	04		

Lot: 9383589

Tensile - Room Temperature (US)

		Ultimate	(KSI)	Yield (K	SI)	Elongati	on (%)	Report
Direction	Tests	Min	Max	Min	Max	Min	Max	
LT	02	78.2	79.8	68.2	69.6	12.0	12.5	







S A M CASTLE & CO.

H 14001 ORANGE AVE.
PARAMOUNT CA
90723
T US

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SOLD

0

A M CASTLE

1420 KENSINGTON ROAD, SUITE 220 OAK BROOK IL 60523 US

A M CAS	TLE	1105169	70 4075		INCLU	SION Ser	ial:20170322-0110516970 Pg 2of3
CUSTON 413045	MER PUR	CHASE ORD	ER NO. & ITE	M	Conste 198377	Illum ORDER NO.	"Constellium Rolled Products, hereby certifies that metal shipped under this order has been
ALLOY 7075	CLAD	TEMPER T651	GAUGE 1.75000 in 44.45 mm	WIDTH 48.500 1,232	00 in	LENGTH 144.50000 in 3,670 mm	inspected and found in conformance with the requirements of the applicable specifications as indicated herein. Any warranty is limited to that shown on Constellium Rolled Products' standard
ITEM OR SPEC PL MILL FIN	ATE, SAV	WED					General Terms and Conditions of Sales. Test reports are on file, subject to examination." Constellium Rolled Products Revenswood, LLC 859 Century Road
	IER SPEC -A-250/12	DIFICATION A					P.O. BOX 68 RAVENSWOOD, WV 26164 USA
PART NU 750488	JMBER		B/L NUM 77792	BER	DATE 03/22/	SHIPPED /2017	Steve Gul
<b>WT. SHIF</b> 9940.000			OF PIECES	GOVT.	CONTRA	ACT NO.	Steve Good - Laboratory Manager
							Steve Good - Laboratory Manager

### Tensile - Room Temperature (SI)

		Ultimate	(N/MM2)	Yield (N	I/MM2)	Elongatio	n (%)	Report
Direction	Tests	Min	Max	Min	Max	Min	Max	
LT	02	539	550	470	480	12.0	12.5	

Chemistry (Actual)

SI FE CU MN MG CR ZN TI ZR Core 0.07 0.21 1.47 0.04 2.49 0.20 5.57 0.04 0.01

OTHERS-EACH: .05 MAX. OTHERS TOTAL: .15 MAX. AL REMAINDER

### All material contained in this lot was cast and manufactured in the USA

Lot: 9383590

Tensile - Room Temperature (US)

		Ultimate (KSI)		Yield (KSI)		Elongation	(%)	Report	
Direction	Tests	Min	Max	Min	Max	Min	Max		
LT	02	78.9	79.0	68.3	70.4	11.5	12.0		

P-860-155D REVISED: 10 2014





S A M CASTLE & CO.
H
I 14001 ORANGE AVE.
PARAMOUNT CA
90723
T US

S 0 L D T 0

A M CASTLE

1420 KENSINGTON ROAD, SUITE 220 OAK BROOK IL 60523 US

A M CAS	TLE	1105169	70	4075		INCLU	ISION Se	rial:20170322-0110516970 Pg 3of3
CUSTOI 413045	MER PUR	CHASE ORE	DER N	0. & ITE	VI	Conste 198377	llium ORDER NO	CERTIFICATION  "Constellium Rolled Products, hereby certifies the metal shipped under this order has been
ALLOY 7075	CLAD	TEMPER T651	GAU( 1.750 44.45	00 in	WIDTH 48.500 1,232	00 in	LENGTH 144.50000 in 3,670 mm	inspected and found in conformance with the requirements of the applicable specifications a indicated herein. Any warranty is limited to the shown on Constellium Rolled Products' standar
MILL FIN	ATE, SAV	IFICATION						General Terms and Conditions of Sales. Test reports are on file, subject to examination." Constellium Rolled Products Revenswood, LLC 859 Century Road P.O. BOX 68
PART NI 750488	-A-250/12 JMBER	A		B/L NUM 77792	BER	DATE 03/22	SHIPPED /2017	Steve Graf
WT, SHII 9940.000			OO8	PIECES	GOVT.	CONTRA	ACT NO.	Steve Good - Laboratory Manager
Tensile -	Room Te	mperature	(SI)					

		Ultimate	(N/MM2)	Yield (N	I/MM2)	Elongation	on (%)	Report
Direction	Tests	Min	Max	Min	Max	Min	Max	
LT	02	544	545	471	485	11.5	12.0	

Chemistry (Actual)

Core

SI FE CU MN MG CR ZN TI ZR 0.07 0.21 1.47 0.04 2.49 0.20 5.57 0.04 0.01

OTHERS-EACH: .05 MAX. OTHERS TOTAL: .15 MAX. AL REMAINDER

All material contained in this lot was cast and manufactured in the USA

QUALITY TEXTS: AMC CA-15403A R 7

THIS TEST REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF THE LABORATORY OR AUTHORIZED QUALITY DELEGATE. THE RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THE CERTIFICATE MAY BE PUNISHED AS A FELONY UNDER FEDERAL LAW.

CHEMISTRY BY OES: ARKSPARK

CHEMISTRIES REPORTED IN PERCENTAGE BY WEIGHT WHEN FRACTURE TOUGHNESS TEST REQUIRED, TESTED PER ASTM E399 WHEN TENSILE TEST REQUIRED, TESTED PER ASTM E8; B557

DUNS Number: 090570149; CAGE Code: 1YWL9

Mercury is not a normal contaminant in aluminum alloys and neither mercury nor any of its compounds were utilized in the manufacture of our product.

"END OF CERTIFICATION"

P-860-155D REVISED: 10 2014

۵ REV. B SHEET 1 OF 1 R. LL M7075T6S

A. TITE

D9
TOT5-T6 SHEET/PLATE SPEC NIT

TOT5-T 17.05.05 10.11.03 DATE RF G C ADD: REF TO \*PLATE\*, \*T651\* TEMPER, AMS 4048, OPTIONAL WIDTH DIM (CAR16-149) 17.05.05 NEW ISSUE MFG. APPR. APPROVED DESIGN DRAWN CHECKED DE APPR. REV. 3 APPROVED SPECIFICATION CONTROL DRAWING MELEASED 2017 JUN 19 47 ECN 17-579 WHERE ".TTT" = THICKNESS (IN INCHES)
AND "W.WWW" = WIDTH (IN INCHES, OPTIONAL, FOR SPECIFYING CUT PLATE) EG. 0.063" THICK SHEET = M7075T6S.063 EG. 3.5" WIDE BY 0.500" THICK PLATE = M7075T6S.500X3.500 S PURCHASE MATERIAL: 7075-T6/T62/T651 ALCLAD ALUMINUM SHEET OR PLATE B PURCHASE MATERIAL (7073) TO TIGGE (651) ALUMINUM SHEET OR PLATE QQ-A-250/13 OR AMS-QQ-A-250/13 OR AMS 4048 / 4049 OR ASTM B209 GQ-A-250/12 OF AMS-OQ-A-250/12 OR AMS 4045 OR ASTM B209 TIT BY 4FT BY 10FT FOR SHEET M707516S. TTT X W.WWW THK WIDTH B PREFERRED SIZE: SPECIFICATION: SPECIFICATION: B PART NUMBER: O. (8) 1 (B) 00 0 O

### MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M7075 7651.750 x 2.250					50 PO / BATCH NO .: 60040612/5107087				
DATE: 18/08/	30			-					
MATERIAL CERT REC'D: 1/25					THICKNESS ORDERED: 1-75"				
QUANTITY RECEIVED: 36-14 FF					THICKNESS RECEIVED: 1.75"				
QUANTITY INSPECTED: 36.1417					SHEET SIZE ORDERED:				
AV .									
QUANTITY REJECTED:		SHEET SIZE RECEIVED:							
	N	CR				· ·			
DESCRIPTION	(Check			COMMENTS					
	Y/N)								
SURFACE DAMAGE	Y	N							
CORRECT FINISH	(Y)	N							
CORROSION	X	(N)							
CORRECT GRAIN DIRECTION	Y	N							
CORRECT MATERIAL PER M-DRAWING	X	N	Ams-	QQ-A-	15	0/12			
CORRECT THICKNESS	(A)	N							
PHOTO REQUIRED	Y	(A)	116.00	262500					
CORRECT REF # TO LINK CERT CORRECT MATERIAL IDENTFICATION	(CK	N	Mi d	383589	_				
CORRECT MATERIAL IDENTIFICATION  CORRECT M# ON THE MATERIAL	(Y)	N				-			
DOES THIS MATERIAL REQUIRE	U	14							
ENGINEERING SIGN OFF	Y	N							
DOES THIS REQUIRE AN		30							
EXTRUSION REPORT	Υ	(N)							
CUT SAMPLE PIECE	OF	MA	TERIAL A	ND PREF	ORN	A HARDNES	SS CHECK.		
	F	RECO	ORD RES	SULTS BEL	.OV	1			
			HRC	HRB		DUR A	DUR D	WEBSTER	
TYPE OF MATERIAL									
SIZE OF TEST SAMPLE									
HARDNESS / DUROMETER READII									
	te	esters	located in	the Quality	Offic	<u>e</u>			
					i				
QC 18 INSPECTION						ENGINEER	ING SIGNOR	F (if required)	
					1				
INSPECTED BY:		SIGNED OFF BY:							
DATE: /8/08/3		DATE:							

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in